OPINION SURVEY OF NAVAL OFFICERS WHO HAVE RECEIVED A NAVY SPONSORED GRADUATE DEGREE

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THESIS

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ABSTRACT

A survey of naval officers who have received a Navy sponsored graduate degree was conducted by a questionnaire to determine their opinions concerning numerous topics related to obtaining a graduate degree and the utilization of their graduate education.

Results showed that obtaining a graduate degree was perceived as having a positive influence on officer retention. Most officers think a graduate degree should be obtained during the five to eight year point in their career. Approximately 70% of the officers who have received a graduate degree have been assigned to a P-coded billet. The majority indicated that fitness reports submitted by graduate schools for officer students should not be considered as equivalent to those received from operational/shore billets by Selection Boards for promotion. The most frequently occurring reason for seeking a graduate education was to remain competitive with contemporaries.

The report summarizes responses to each question and recommends the direction of future research.

TABLE OF CONTENTS

I. INTRODUCTION

The Secretary of the Navy established policies on graduate education for naval officers in his instruction of 2 July 1971. This instruction states:

> The characteristics of our Navy and Marine Corps of today and especially of the future, demand that we keep under continuous evaluation the educational base of our officers. Previous concepts of the types and extent of academic knowledge required to establish the requisite educational base must be revised to any extent necessary to meet this modern challenge.[1]

In response to this instruction, the Superintendent of the Naval Postgraduate School established a Navy Graduate Education Study Committee:

> (1) to determine the role of graduate education in preparing the professional Naval officer for the challenges of the future, (2) to study current and proposed career management policies and procedures to determine how best to integrate graduate education into Naval officer career patterns; and (3) to recommend educational restructuring that will enhance the effectiveness of the Naval Postgraduate School in meeting future Navy graduate education objectives.[2]

The student body was, "invited to aid and support the committee in meeting its objectives by participating in the detailed study activities."[3]

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[1]SECNAVINST 1520.4A of 2 July 1971.

[2]Postgraduate School Notice 1520 of 25 October 1971.

[3]Ibid.

Accordingly, the authors decided to conduct research in this area of concern to satisfy the requirement for a thesis in personnel management.

A. PURPOSE OF THE STUDY

The effect of a postgraduate education for Naval officers is a very broad and complex subject. Therefore, the purpose of this study is limited to collecting and analyzing data that may prove to be useful by providing pertinent information to the Graduate Education Committee through an opinion survey of Naval officers who have received a Navy sponsored graduate degree.

B. DEFINITIONS

Specific terms used may be subject to various interpretations, therefore, the following definitions are enumerated as they are used throughout the study.

Specialty - An officer manpower classification category determined by an officer's primary functional area.

Designator Code - A classification device which identifies an officer's specialty.

Subspecialty - An officer manpower classification category defined by an operational, technical, or managerial field of interest to the Navy, which requires specialized professional skills or knowledge (obtained through various combinations of pertinent education, training and/or experience).

P-code - (A subspecialty code) assigned to billets requiring incumbents with at least a master's level of education for optimum performance of duty.[4]

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[4]OPNAV INSTRUCTION 1211.6 dated 8 January 1973.

II. BACKGROUND

A. DEVELOPMENT OF SPECIALTIES

The Navy at its conception needed sailors. Increasing size and complexity, however, required that the Navy adapt to change. The staff corps, comprising the engineering, medical and supply branches was introduced, then came the specialists. These officers were, for the most part, drawn from the naval officers already commissioned. Once they were designated as specialists, they could no longer take command at sea; thus, they were classified as restricted line officers.

> Attendant to the complexities encountered and the special skills required in the Navy's transition from sail to steam, Congress first authorized a technical or specialty group, the Corps of Naval Engineers, in 1842. Since that time specialization within the naval profession has continued to be an accepted, albeit sometimes questioned, philosophy of the Navy.[5]

The officer structure of the Navy by the beginning of World War II consisted of the unrestricted line, the restricted line, and the staff corps. It became apparent during the war that additional types of specialists were needed. These functions were performed by reserves during the immediate post-war era; however, in attempting to deal

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[5] Report of a Board to study The Billet Requirements and Grade Distribution in the Subspecialty and Specialty Areas in the U. S. Navy, 17 December 1964, (Combs Board).

with rapid technological developments the Navy realized that it must have more regular officers to fill specialty billets.

The source of these officers to fill these specialty billets essentially had to come from the unrestricted line officer community. Accordingly, the Weakley-Daniel Board was appointed by the Chief of Naval Personnel in 1956 to:

> Review all aspects of the Postgraduate Education Program and to make recommendations pertinent to current and future educational requirements and officer career planning.[6]

B. GRADUATE SCHOOL SELECTION PROCEDURES

One of the basic problems of the Weakley-Daniel Board was to determine ways to fill technical billets requiring line officers through selection procedures for the Navy Postgraduate Education Program. The Board stated:

> The current and past practice has been to consider only volunteers when selecting candidates for graduate work. Separate selection boards, meeting independently, have attempted to fill quotas solely from volunteers. In many instances this has been impossible due to an insufficient number of applicants or the failure of many candidates to meet eligibility criteria. In other instances, officers have been channeled into courses in which they had only secondary interest. The board considers that these practices are undesirable. It is apparent that if the current and future educational requirements of the Navy are to be met, a substantially larger number of officers

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[6] Report on the Postgraduate Education Program of the Navy, 1956, prepared by a Board appointed by the Chief of Naval Personnel (Weakley-Daniel Board).

> will be needed to undertake graduate studies than can now be met on a strictly voluntary basis. The Board, therefore believes that all officers qualified for post-graduate education should be required to state their preferences and be considered by a single selection board.[7]

This recommendation was adopted and the use of the Officer Preference Card for indicating the desire to attend Postgraduate School was initiated. The Navy Directive for this program is OPNAVNOTE 1520. Each year this notice is revised and promulgated to all ships and stations. The purpose of this notice, as expressed in paragraph one, is to:

> (1) establish officer eligibility for consideration by the Regular Postgraduate Selection Board, (2) provide information on academic prerequisites and guidelines for the various curricular program, and (3) provide instructions to officers for indicating or updating post-graduate curricular preference, or for submission of official letter request, as appropriate.[8]

The current notice contains pertinent details concerning post-graduate and other advanced education programs planned for the coming academic year and states, "The source document used to determine an officer's preferences for Postgraduate study is the officer preference card."[9] On this card an officer can indicate his first, second, and third

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[7]Ibid.

[8]OPNAVNOTE 1520 of 20 April 1972.

[9]Ibid.

curriculum choices. Officers who apply for an assignment to a Doctoral Study Program must submit a letter request instead of simply indicating their desire on a preference card.

The Postgraduate Selection Board is convened by the Chief of Naval Personnel and is charged to:

> Select officers for postgraduate education within quotas which reflect the Navy's subspecialty billet requirements in the various fields of study available. In selecting officers, the board will take into consideration the stated preferences of the individual officer, his professional performance and academic background records.[10]

The Postgraduate Selection Board annually screens surface officers in the third year of commissioned service and aviation officers in the fifth year since the aviation training cycle is generally considerably longer.[11] The officers are then advised, prior to rotation to shore duty or returning to civilian life, of their selection. This period is considered the ideal point in an officer's career to attend graduate school. The Weakley-Daniel Board stated:

> This education occurs generally from the fifth through eighth year of commissioned service. To attempt to commence it sooner would prevent proper professional preparation in the Fleet. To delay it further would retard the orderly development of an officer's technical and professional growth.[12]

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[10]OPNAVNOTE 1520 of 20 April 1972.

[11]Ibid.

[12]Weakley-Daniel Board, op. cit.

The Officer Fact Book reiterates that the ideal period for graduate education is the fifth through the eighth year of commissioned service.

This recommendation of the Weakley-Daniel Board concerning selection procedures has proven to be very effective. Every officer can make his postgraduate curriculum preferences known with a minimum amount of paperwork. With the changing attitudes toward postgraduate study since 1956, the requests to attend postgraduate school far outnumber the current billets available. For example, the fiscal year 1973 postgraduate selection board selected only 1801 officers to attend Postgraduate School from a total of 11,867.[13] This indicates that only 15 percent of those who applied were selected.

C. DEVELOPMENT OF SUBSPECIALTIES

The Navy continued to have difficulty in filling required billets and:

> Early in 1959 the Franke Committee determined that increasing requirements for officers with greater depth of knowledge in technical and management areas could best be met by unrestricted line subspecialists rather than by an increased number of restricted line specialists. In order to develop the required information to implement that committee's recommendations, the Keith Board was convened in July of that year.
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> The Keith Board recommended that a detailed program of subspecialization be developed and implemented as soon as practicable. In general it was proposed to include provisions for increased postgraduate education in certain specified fields, greater channelization of duty assignments in subspecialty areas, changes in

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[13]OPNAVNOTE 1520 of 20 April 1972.

promotional concepts, and a minimum of two tour assignments in subspecialty areas.

A system to identify and maintain necessary and accurate accounting of billets requiring postgraduate education was promulgated for implementation by BUPERS INSTRUCTION 1211.3 of 26 August 1960. This system provided for identification in Manpower Authorization (NavPers 576) by an appropriate 4-digit P-code of those billets requiring a postgraduate incumbent.

Commencing in October 1961, action was initiated in the Bureau of Naval Personnel to require that, as practicable, unrestricted line officers possessing a subspecialty be ordered to billets requiring their subspecialty when assigned ashore.

The Dillon Board report, completed in December 1962, stated a need for a better program of education, training and duty assignments of officers to provide more satisfactory career patterns. Implementation of the Navy P-code system for identifying billets requiring officers with postgraduate education was considered to be ineffective. A recommendation was made that the Secretary of the Navy issue a policy letter and take such other actions as necessary to emphasize "the necessity for all Naval officers to develop a subspecialty." Shortly thereafter, the Pride Board in its study of "Criteria for Selection to Flag Rank in the Navy" recommended:

a. that CNO publish and keep up to date a "Navy Doctrine for Officer Management",
b. that unrestricted line officers with postgraduate education, or otherwise developed subspecialty, be assigned to at least two tours ashore and one or more at sea in his subspecialty, and
c. that a sponsor be identified and assigned for each significant specialty and subspecialty.

As a result of these studies, OPNAV INSTRUCTION 1040.2 of 9 December 1963, entitled "Career Management of Navy Officers", formally defined and promulgated the subspecialty concept. Certain advisory management control responsibilities were assigned to restricted line and staff corps sponsors and subspecialty area advisors. Procedures were outlined

therein for the development of firm billet requirements within the respective areas. Although subspecialization had been recognized as a factor in officer assignment in the Navy for years, this directive was the first real formalization of the subspecialty concept based on sound and effective management principles.

In March 1964 specific officers in the Bureau of Naval Personnel were assigned as subspecialty liaison officers in each subspecialty area. On 2 June 1964, the Chief of Naval Personnel approved criteria, as developed in coordination with designated area advisors, for qualification and identification of subspecialists.

OPNAV INSTRUCTION 1211.6 of 22 September 1964 revised the procedures for identification of unrestricted line officer for subspecialty billets and restricted line and staff corps officer billets requiring graduate level education and incorporated newly developed P-code and S-code designators. This instruction, with the promulgation of a BUPERS INSTRUCTION now under preparation which will prescribe officer subspecialty qualification and identification procedures, should provide necessary direction for full implementation of a subspecialty program. [14]

OPNAV INSTRUCTION 1211.6D of 8 January 1973 contains the latest Navy policy concerning subspecialties. Certain paragraphs of the Secretary of the Navy's policy statement are quoted:

In order to exploit the full potential of this advance knowledge, the graduate education programs must prepare officers of the line, restricted line, and staff corps, to meet requirements in a wide variety of technical, managerial and policy making assignments. Graduate level education in specific disciplines is often essential for optimum performance of duty. Additionally, and even more importantly, graduate education broadens the capacity for original thought, develops the analytical tools for problem solving, provides better perspective,

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[14] Combs Board, op. cit.

> strengthens mental discipline and improves the ability to communicate ideas, all of which enhance the officer's value in whichever assignment he may have. [15]

The Chief of Naval Personnel has recently established the Operational Technical Managerial System: "...to provide officer professional development management in all areas of Navy endeavor."[16] The primary goal of this system is to ensure that officers are properly coded in order to provide the correct assets to fill subspecialty billets. Selection boards are conducted to determine those officers who are "Proven Subspecialists" based on their performance in a subspecialty area. Those selected must have a P- or S-code plus experience in that area. Those who have not had recent experience in their subspecialty area do, however, retain their P-code. The board, in effect, eliminates those from the "proven" area because they are obsolete. Since many of the subspecialty areas are of a technical nature, the following background is given on technological obsolescence.

D. TECHNOLOGICAL OBSOLESCENCE

> Sometimes undefined, technological obsolescence in an individual is generally taken to mean a deficiency of knowledge such that he approaches problems with viewpoints, theories, and techniques less effective than others currently used in his field of specialization. Several types of obsolescent persons are readily identified. One is the man who has not kept up with new knowledge and techniques in his field. His professional competence ages in

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[15] OPNAVINST 1211.6D of 8 January 1973.

[16] Ibid.

> the face of scientific and technological growth, and makes him obsolescent as compared both to new graduates and to his colleagues who keep up and who apply new findings. A second type is the individual who keeps up with a very narrow segment of his field (usually by working in it for years), but who loses contact with broader changes. This second person is so "overspecialized" that he cannot effectively undertake new work in his own or in closely related fields, and cannot apply relevant new knowledge from them to his own particular specialty. A third type is the person whose career line evolves from one interest to another, so that he moves away from his original field of training into another not very closely related one. He is obsolescent in his own specialty because his training is no longer integrated with his work. It is often more logical than meaningful to classify such a person as obsolescent.[17]

The authors are primarily concerned with the first and third types of people mentioned above. An opinion poll of 931 scientists and engineers was conducted concerning new developments in 1967.[18] One of the questions was:

> Does keeping up with technological developments present a problem in your field?

The respondents answered:

Moderately often	53%
Serious problem	36%
Little or no problem	16%

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[17] Continuing Education for R & D Careers, An Exploratory Study of Employer-Sponsored and Self-Teaching Models of Continuing Education in Large Industrial and Federal Government Owned R & D Laboratories, National Science Foundation, June 1969.

[18] Industrial Research, July 1967.

In response to the question:

> How do you maintain competence in your specialty area?

The respondents rated the methods in the following order:

1. Technical journals
2. Trade journals
3. Technical society meetings and seminars
4. Personal contacts
5. University or technical school courses (off-job)
6. Company seminars and courses

The respondents in the survey were working in their fields of study at the time the survey was conducted.

Do naval officers who have completed a technical curriculum have the opportunity to maintain competence in their specialty area only when assigned to a P-coded billet? In view of the demanding nature of operational billets at sea, very little time is available for maintaining competence in a specialty area when assigned to these billets. Therefore, the questions of how long and whether or not officers think they maintain their technical competence will be of value in determining when officers should be assigned to P-coded billets.

E. FITNESS REPORTS

An analysis of any program concerning officers would be incomplete without considering the use of fitness reports and the effect of the program upon the future potential of the officers concerned to serve in the next higher rank.

Instructions concerning the reporting requirements on the fitness of officers are contained in Enclosure (1) to the Bureau of Naval Personnel Instruction 1611.12C. This instruction states:

> Fitness reports are the primary basis for selecting officers for promotion and assignment to duty. Realistic objective evaluation of individual officers are essential to the accomplishment of each of these tasks. Reports on officers ordered to duty under instruction will be submitted upon completion of the course of instruction. In instances where the course of instruction exceeds a year, a regular periodic report shall be submitted at the end of each academic year as well as upon detachment of the officer student.[19]

These remarks are the only guidance given in this instruction concerning the writing of fitness reports for officers assigned to duty under instruction. Therefore, it is implied that specific instructions for writing fitness reports is determined by each individual command that has officers assigned to duty under instruction.

Accordingly, the Naval Postgraduate School Instruction 1611.2 provides amplifying guidelines to the Curricular Officers who are the delegated reporting seniors for officer students, "appropriate to the unique environment of the Postgraduate School, and for uniformity in preparation of reports."[20] Subparagraph (b) states:

> as officer students are enrolled in curricula normally of duration one year or longer, it is considered essential that they be evaluated on more than academic standing. An officer's performance in his studies may or may not

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[19]BUPERSINST 1611.12C of 20 March 1972.

[20]Naval Postgraduate School Instruction 1611.2 of 7 January 1969.

correlate with his overall professional abilities. It is therefore important to look for more in assessing his worth to the Navy. For instance, (1) demonstrated potential in the characteristics desired in a Naval officer should be the basis for evaluation along with performance, when occurring, of professional nature, and (2) toward the end of this program an officer student engages in research or project work which may relate to the fundamental professional area of the curriculum studied. Noteworthy performance in this area could be used as the basis for specific comment.

In instances of uncertainty as to the appropriate evaluation of any rating area the "Not observed" block should be marked.[21]

Instructions for fitness reports concerning officer students attending civilian universities are stated as follows:

A) At institutions where an ROTC unit is established the Commanding Officer of the NROTC unit is the regular reporting senior of officer students.
B) At institutions where no NROTC unit is established, the regular reporting senior for officer students is the Commandant of the Naval District to whom they have reported for duty.[22]

In essence, the same form used to evaluate Naval officers while serving in operational billets both at sea and ashore, concerning his professional capabilities, personality traits, and future potential, is also used to evaluate his performance as a student while attending a graduate school. In view of the nature of the assignment of duty under instruction it is questionable whether or not valid evaluation can be

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[21] Naval Postgraduate School Instruction 1611.2 of 7 January 1969.

[22] Naval Postgraduate School Instruction 5000.20 of 11 June 1971.

made concerning the future potential of officer students for subsequent assignments and promotions and leads to considerable speculation as to how these reports are viewed by the officers for whom the reports are written.

F. INFLUENCE OF GRADUATE EDUCATION ON PROMOTION

The effect of a graduate education toward increasing the promotion potential of a naval officer is a matter of considerable speculation. The relationship between promotion and educational experience is neither legislated nor predetermined. Even if it were, it would necessarily change from time to time because of the needs of the service and the varying dictates of leadership. Paclucci and Collins concluded in a study that:

> the available statistics indicate that promotion potential through the grade of Captain, for the unrestricted line officer is enhanced by advanced education. The evidence concerning the promotion potential to flag rank is inconclusive, however, it appears that a refined analysis would show that flag selection is indeed enhanced by advanced education, and this enhancement will become more prevalent in future years.[23]

Since selection boards do not reveal the reasons for their selections, the opinions of officers with advanced degrees who were selected is not a valid indication of the exact reason for promotion. If such an officer is promoted, he is never certain what weight was given to his graduate

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[23] Captain D. A. Paclucci and LCDR F. I. Collins, Jr., U. S. Naval Institute Proceedings, Volume 93, Number 1, January 1967, p. 56.

work in the decision to promote him. His performance in other assignments may have been the deciding factor or his advanced education may have been precisely the factor which tipped the scales in his favor. On the other hand, an officer with advanced education who fails selection may rationalize that he was channeled into a narrow specialty as a result of his education and therefore missed promotion when the actual reason was his performances at other sea and shore assignments.

Since the promotion-education relationship will very probably never be formalized into specific rules for selection opportunities it is sheer speculation as to the exact degree of correlation. However, it will be interesting to see how the officers with an advanced degree view the value of their postgraduate education in determining their previous promotions.

III. RESEARCH PROCEDURE

A. QUESTIONNAIRE DESIGN

The questionnaire was developed from recommendations of faculty and students and of the Graduate Education Study Committee. It was designed to obtain from graduates the following information:

1. Period of time in a Naval officer's career that he should study for a graduate degree.

2. The length of time that graduate officers intend to remain in the Navy.

3. The influence that the availability of graduate education had upon the officer's career decision.

4. The reasons officers seek graduate education.

5. Opinions as to the consideration that selection board should give to officer students' fitness reports.

6. Designator changes as a result of graduate education.

7. Recommendations concerning the P-coding system.

8. Effect of obtaining a P-code upon an officer's career.

9. Utilization of graduate education in P-coded and other billets.

10. If and when assigned to P-coded billets.

11. Opinions as to the length of time until officers educated in technical areas become technologically obsolete unless assigned to a billet in that area or maintain currency on an individual basis.

12. Methods by which officers have kept current.

13. Opinions as to the effect of graduate education upon promotion.

14. Curriculum studied and preferred curriculum.

15. A comparison of NPS and civilian schools graduates' opinions concerning curriculum structure, school administration, academic difficulty, instructor and course excellence, and whether more officers would have preferred to attend NPS or civilian schools.

A pilot questionnaire was initially mailed to 150 officers holding advanced degrees from NPS. The responses to this questionnaire were then utilized to prepare the large sample questionnaire. The questions were designed so that respondents were not given the option of selecting "no opinion" but had to select a listed response or none at all. A comment sheet was also used so that respondents could express themselves more fully if necessary.

B. SAMPLING TECHNIQUE

The Naval Postgraduate School maintains a file of all active duty alumni on magnetic tape. A magnetic tape of all active duty officers who have received a Navy sponsored master's degree, or higher, from civilian universities was requested and received from the Bureau of Naval Personnel.

The total number of officers on active duty who have received a master's degree or higher from the Naval Postgraduate School was

2917 as of December 1972. The corresponding number of those who had attended civilian universities was 2148. Accordingly, the total population to sample was 5065. It was decided that a 10 percent sample of all designator categories would be required to have statistical significance. To ensure an adequate response to the questionnaire, a sample size of 1265 (25% of the total population) was selected.

The information contained on both magnetic tapes was sorted by designator by rank. To ensure a stratified random sample from each category, the fourth name from each tape was then selected with a random start from the mailing list. Hence, 732 questionnaires were mailed to graduates from the Naval Postgraduate School and 533 were mailed to graduates from civilian universities.

C. METHOD OF ANALYSIS

The optically scanned answer sheets were specifically designed for this questionnaire to yield a punched card for each respondent. The results of the survey were tabulated and analyzed utilizing a package of computer programs called the Statistical Package For The Social Sciences (SPSS).[24] These procedures enabled a timely overview of the large volume of data. Time constraints precluded a more in-depth analysis.

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[24]Bent, Hull, and Norman Nie, Statistical Package for the Social Sciences (SPSS), McGraw-Hill, 1970.

IV. PRESENTATION OF THE DATA

Of the 1265 questionnaires mailed, 875 responses were returned but only 826 had been received when this analysis was conducted. An additional 61 were returned due to incorrect addresses. Thus, 826 of a possible 1265 (65.3%) are used in the analysis. Appendix A presents the questionnaire and the absolute frequencies and percentages of each response. Appendix B is a tabulation of the population and sample size by designator of Naval Postgraduate School and civilian schools' graduates.

As described in the sampling technique the population was sorted by designator and by rank and a one-fourth sample was taken with a random start. The analysis was limited, however, to grouping the designators into their various communities of unrestricted line officers, restricted line officers, and staff corps officers rather than by individual designators. Table 1 presents the total population (N) in each rank and community and the number of responses received (n) in each category.

As can be seen from the table the only category not represented for which a population exists is the Lieutenant (junior grade) rank of the restricted line community. The one-fourth random sample could explain this lack of representation. The minimum percentage representation, excepting this deficiency, is the unrestricted line Lieutenant category with 8.7% representation. The least representation by rank is the

Table 1. Total Population and Responses Received

	URL		RL		STAFF		TOTAL	
	N	n	N	n	N	n	N	n
RANK								
LTJG	106	10	3	0	13	4	122	14
LT	365	32	81	8	185	18	581	58
LCDR	847	135	432	75	593	94	1863	304
CDR	667	96	327	54	574	100	1568	250
CAPT	377	78	190	37	265	55	832	170
RADM	52	9	20	5	17	3	89	17
VADM	10	2	0	0	0	0	10	2
TOTAL	2423	362	1045	179	1597	274	5065	826

Lieutenant rank with 10%. The lowest represented percentage by communities is the unrestricted line community with 14.9%. The standard error for the unrestricted line community at the 95% confidence level (assuming the worst case for p = 0.5) is $\pm$ 0.047. For the population as a whole this error is reduced to $\pm$ 0.031.[26] The number of officers who had studied technical curricula (n = 401) was not significantly different from the number who had studied non-technical curricula (n = 404) with 21 missing observations. The curricula division (technical/non-technical) as used in this analysis is shown on the subject list in Appendix A.

[26] Appendix C (1)

The percentage sums may not equal 100% in all cases due to rounding. Missing observations of cross-tabulated variables exceeds, in some cases, those of simple tabulations since some officers failed to respond on different questions.

The responses to the questions were analyzed by designator community and rank. The differences in responses in these categories are presented when they are significant. Crosstabulations and correlations are also presented when they are either significant or of a general interest.

A. SUMMARY OF IMPORTANT FINDINGS

A summary of the significant findings considered to be of major importance are listed below. An analysis of each question is presented in the following section with statistical proofs located in Appendix C:

1. Most naval officers (70.9%) with a graduate degree think a graduate education should be obtained during the 5 - 8 year point in their career whereas only 38.6% actually attended graduate school during this period.

2. Attending graduate school was determined to be a positive influence on officer retention, especially among those officers who had completed eight years or less commissioned service. Those indicating that obtaining a graduate education was a negative influence on officer retention also indicated they intend to remain in the Navy for at least 20 years.

3. Significantly more naval officers gave "to remain competitive with contemporaries for further assignments and promotions (ticket punching)" as the reason why officers seek graduate education, than any of the remaining reasons available on this questionnaire.

4. Most officers are of the opinion that fitness reports submitted by graduate schools for officer students should not be considered as equivalent to fitness reports received from operational/shore billets by Selection Boards for promotion.

5. Graduates of the Naval Postgraduate School considered it to be equivalent to civilian schools, whereas graduates of civilian schools considered their school to be superior to the Naval Postgraduate School. There were no significant differences, however, between their opinions concerning course and instructor excellence, the degree of academic difficulty, and the effects on social/family life at their respective schools.

6. Very few Naval officers (6.6%) considered that a P-code was detrimental to their career. However, it cannot be concluded that a P-code is beneficial in view of the large number who considered that it had no effect.

7. Of those officers who have received a graduate degree 68.6% have been assigned to a P-coded billet. The restricted line and staff corps have assigned significantly more officers to P-coded billets than the unrestricted line.

B. DETAILED ANALYSIS OF RESPONSES

1. When Should a Naval Officer Study for a Graduate Degree?

As noted in the background material, it is established that the ideal point in an officer's career to attend graduate school is the 5 - 8 year point.

Table 2 shows a comparison of when officers have received graduate degrees and when they think an officer should study for a graduate degree.

Table 2. Years Officers Studied and When Officers Should Study

YEARS	DID		SHOULD	
	Percentage	N	Percentage	N
1 - 4	13.4	111	6.4	53
5 - 6	14.9	123	40.9	338
7 - 8	23.7	196	30.0	248
9 - 10	17.1	141	15.5	128
11 - 12	11.1	92	5.1	42
13 - 14	8.2	68	1.5	12
15 - 16	4.8	40	0.1	1
17 - 18	3.1	26	0.0	0
19 - More	3.5	29	0.5	4
TOTAL	100.0	826	100.0	826

This table shows that a significantly higher percentage (70.9%) of the officers with a graduate degree believe that a graduate education

should be obtained during the 5 - 8 year point than the 38.6% who actually attended graduate school during this period.[27]

2. Career Intention

Of the officers who have received a graduate degree, 96.7% intend to remain on active duty for at least 20 years and 72.5% intend to remain on active duty in excess of 20 years. However, it is noted that 32.1% have already completed at least 19 years commissioned service. Of those officers who have eight years of less commissioned service, 79% intend to remain in the Navy for at least 20 years.

3. Effect on Retention

The availability of graduate education was a positive influence on officers' decisions to remain in the Navy.[28] Of the officers who attended graduate school with six years or less commissioned service, 68% indicated that it was a positive influence on their decision while only 34% indicated that it had no effect. This positive influence increases to the 7 - 8 year point, then decreases as a function of years of commissioned service completed. This is expected since an officer with more than eight years service has probably already made his career decision.

Those officers who indicated that the availability of a graduate education negatively influenced their decision to remain in the Navy

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[27]Statistical significance shown in Appendix C (2).

[28]Appendix C (3)

Table 3. Years Commissioned Service By Career Intentions

Years Service	Career Intentions				
	20	20	20-26	26+	Total
1 - 4	1.1	0.4	0.7	0.6	2.8
	9	3	6	5	23
5 - 6	1.0	1.0	0.4	0.4	2.7
	8	8	3	3	22
7 - 8	0.2	2.6	2.2	0.5	5.5
	2	21	18	4	45
9 - 10	0.4	3.9	2.9	1.8	9.1
	3	32	24	15	74
11 - 12	0.4	4.0	5.4	2.2	12.0
	3	33	44	18	98
13 - 14	0.1	5.0	6.1	2.7	14.0
	1	41	50	22	114
15 - 16	0.0	4.2	6.4	2.0	12.5
	0	34	52	16	102
17 - 18	0.1	1.5	5.1	2.6	9.3
	1	12	42	21	76
19 +	0.0	1.6	9.3	21.2	32.1
	0	13	76	173	262
TOTAL	3.3	24.1	38.6	33.9	100
	27	197	315	277	816

Missing Observations: 10

attended graduate school when they had 14 years or less commissioned service. These same officers indicated that they intend to remain in the Navy for at least 20 years. The negative influence apparently was overridden by stronger positive influences.

Table 4. Career Influence of Graduate Education and Years Commissioned When Graduated

	Career Influence			
	Positive	Negative	No Effect	Total
1 - 4	8.8 72	0.0 0	4.6 38	13.4 110
5 - 6	9.9 81	0.1 1	4.7 39	14.7 121
7 - 8	14.7 121	0.1 1	9.0 74	23.8 196
9 - 10	8.6 71	0.4 3	8.0 66	17.0 140
11 - 12	4.5 37	0.1 1	6.6 54	11.2 92
13 - 14	3.0 25	0.1 1	5.1 42	8.3 68
15 - 16	1.9 16	0.0 0	2.9 24	4.9 40
17 - 18	1.7 14	0.0 0	1.5 12	3.2 26
19 +	15	0	14	29
TOTAL	55.0 452	0.9 7	44.2 363	100 822

Missing Observations: 4

4. Why Do Naval Officers Seek Graduate Education?

There are many reasons why officers seek a graduate education. The reason given by officers most frequently (39.4%) was to remain competitive with contemporaries for further assignments and promotions (ticket punching). As shown in Table 5, significantly fewer officers were of the opinion that the primary reason for seeking graduate

education is to become a more capable officer (26.7%), and to fulfill their educational aspirations (24.4%).[29]

The percentage of officers who desired "To become a more capable naval officer" increased with rank, while those who desired "To fulfill personal educational aspirations" decreased with rank as shown in Table 5.

Table 5. Reasons for Seeking Graduate Education by Rank

	LTJG	LT	LCDR	CDR	CAPT	RADM	VADM	TOTAL
Ticket Punching	38.5 5	41.7 25	43.9 136	37.2 93	35.9 60	18.8 3	0.0 0	39.4 322
More Capable Officer	0.0 0	6.7 4	19.7 61	30.4 76	39.5 66	62.5 10	100 1	26.7 218
Change Designator	0.0 0	1.7 1	0.3 1	0.0 0	1.8 3	0.0 0	0.0 0	0.6 5
Procure P-code	0.0 0	0.2 2	0.4 3	0.2 2	0.0 0	0.0 0	0.0 0	0.9 7
Retirement Employment	15.4 2	8.3 5	11.0 34	8.0 20	3.0 5	0.0 0	0.0 0	8.1 66
Educational Aspirations	46.2 6	38.3 23	24.2 75	23.6 59	19.8 33	18.8 3	0.0 0	24.4 199
TOTAL	1.6 13	7.3 60	37.9 310	30.6 250	20.4 167	2.0 16	0.1 1	100 817

Missing Observations: 9

5. Choice of Curriculum Selection

As explained in the background material, the curriculum for officers attending graduate school is determined by the officers' choices,

[29]Appendix C (4)

the educational requirements presented to the Bureau of Naval Personnel by the Department of the Navy, and the Postgraduate School Selection Board.

To fulfill the educational requirements of the Navy, a small percentage (13.3%) of officers attend graduate school in a curriculum other than their choice. The percentage of officers who attended in the curriculum of their choice was significantly different in some periods of years commissioned service when graduated, however, the slight decrease in choice with increasing years service is not significant.[30]

6. Fitness Reports for Graduate Students

The frequency and percentage of responses as to how selection boards for promotion should consider fitness reports received from graduate schools is shown in Table 7.

These data indicate that 82.7% of the officers who have received a graduate degree believe that fitness reports received from graduate schools should not be regarded as equivalent to fitness reports received from operational/shore billets. Neither do officers desire that their fitness reports be marked "Not Observed," but apparently desire some weighting between these two extremes.

7. Designator Changes

One of the purposes of the graduate education program is to provide an input source to the restricted line community. Table 8 shows

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[30]Appendix C (5)

Table 6. Chose Curriculum by Years Service When Graduated

	N	Percentage
1 - 4	99	89.2
5 - 6	108	88.5
7 - 8	170	86.7
9 - 10	128	90.8
11 - 12	77	84.6
13 - 14	55	80.9
15 - 16	34	85.0
17 - 18	22	84.6
19 +	21	72.4
TOTAL	714	86.7

Table 7. Fitness Reports

	N	Percentage
Equivalent to Operational/Shore Billet Fitness Reports	142	17.2
Special Assignment, Little Emphasis on Professional Ratings Assigned	292	35.4
Special Assignment, Emphasis Only on Grade Point Average	153	18.5
"Not Observed" and Submitted for Record Purposes Only	238	28.8
TOTAL	825	100

Missing Observations: 1

that 87.2% of those who have changed their designator as a result of receiving a graduate education were in the restricted line community. Since the major source of restricted line officers is the unrestricted

line community, it can be assumed that these officers changed from unrestricted to restricted line.

Table 8. Designator Changes by Officer Communities

Changed Designator	URL	RL	STAFF	TOTAL
Yes	0.6	57.3	3.6	14.2
	2	102	10	114
No	99.4	42.7	96.4	85.8
	360	76	264	708
TOTAL	100	100	100	100
	362	178	274	822

8. Attitudes Toward School Attended

The purpose of these questions was to determine whether the respondent attended Naval Postgraduate School or a civilian university and to compare how officers regard certain aspects of the school attended. Of the officers with graduate degrees 58% attended Naval Postgraduate School and 42% attended civilian universities. The sample (N = 826) was proportionate to the population with 57% having attended Naval Postgraduate School and 43% having attended civilian universities.

a. Preference for Naval Postgraduate School or Civilian University

It is significant that the majority of those who attended a civilian university considered it superior to Naval Postgraduate School, whereas the majority of those who attended Naval Postgraduate School

considered it to be equivalent to a civilian university.[31] This relationship persists even when the curricula available at different schools are removed from the comparison.

Table 9. Naval Postgraduate School Graduates

	N	Percentage
Naval Postgraduate School Superior	79	16.8
Prefer Civilian School	105	22.4
Equivalent to Civilian	285	60.8
TOTAL	469	100

Missing Observations: 5

Table 10. Civilian University Graduates

	N	Percentage
Superior to Naval Postgraduate School	255	72.4
Prefer Naval Postgraduate School	11	3.1
Equivalent to Naval Postgraduate School	86	24.5
TOTAL	352	100

Missing Observations: 5

b. Curriculum Structure

Significantly more officers who have attended civilian schools considered that their curriculum was broadly structured allowing for numerous electives or was well balanced than those who attended Naval Postgraduate School.[32] However, considering only the officers who attended Naval Postgraduate School there was no significant

[31] Appendix C (6)

[32] Appendix C (7)

difference between those who considered their curriculum narrowly structured (51.5%) and the combined percentage of those who considered their curriculum broadly structured or well balanced (48.5%). Notable among those curricula at Naval Postgraduate School that were considered narrow with few electives were meteorology (91%), oceanography (78%), mechanical engineering (77%), and computer science (75%). The curricula considered narrow at civilian universities that were significant were financial management (91%) and physics (82%).

Table 11. Curriculum Structure

	NPS	Civilian
Broadly Structured	13.0 61	29.9 105
Narrowly Structured	51.5 241	31.3 110
Well Balanced	35.5 166	38.8 136

c. School Administration

The majority of officers considered that their school administration was efficient and helpful to some degree. There was no significant difference between the percentages of graduates of Naval Postgraduate School and civilian universities who considered that the school administration was inefficient and uncooperative. However, the percentage of officers responding "Very efficient and helpful" that attended civilian schools was significantly higher than graduates of Naval Postgraduate School with the same response.[33]

[33]Appendix C (8)

Table 12. School Administration

	NPS	Civilian
Very Efficient and Helpful	26.4 124	47.2 166
Efficient and Helpful	69.7 327	50.5 178
Inefficient and Uncooperative	3.9 18	2.3 8

d. Academic Difficulty

The majority of officers with a graduate degree found that the academic difficulty was as anticipated. Of those who found it more difficult than expected, a slightly higher percentage attended Naval Postgraduate School. There was no difference between those who considered it less difficult than expected. Significant among those curricula at Naval Postgraduate School with academic difficulty more than expected were operations research (44%) and meteorology (36%). From civilian universities the more difficult were oceanography (40%) and physics (36%).

Table 13. Academic Difficulty

	NPS	Civilian
As Anticipated	56.5 265	66.4 234
Less Than Anticipated	17.7 83	16.8 59
More Than Anticipated	25.8 121	16.8 59

e. Instructor and Course Excellence

The opinions of officers who had attended Naval Postgraduate School and civilian universities concerning the excellence of their instructors and courses were significantly different within percentage categories. If the instructor excellence means for respondents from Naval Postgraduate School and civilian universities are computed by assuming "More than 90%" equals 95% and "Less than 10%" equals 5%, the mean of civilian schools' graduates (68%) is higher than Naval Postgraduate School mean (58%). The variances, however, are so large that this apparent difference cannot be shown to have statistical significance. The same analysis holds for course excellence.

Table 14. Instructor and Course Excellence

	Instructors		Courses	
	NPS	Civilian	NPS	Civilian
More than 90%	7.0	25.3	17.3	34.7
	33	89	81	122
About 75%	39.0	41.2	51.2	47.4
	183	145	240	167
About 50%	35.2	21.6	24.5	16.2
	165	76	115	57
About 25%	17.3	9.4	6.2	1.1
Less than 10%	1.5	2.5	0.8	0.6
	7	9	4	2

Of the graduates of Naval Postgraduate School that considered 75% or more of their instructors to have been excellent (46%), the curricula leaders were physics (74%), electronics engineering (74%), and operations research (70%). In this category of 75% or more at

civilian schools was 66.5% with notable curricula being international relations (94%), naval construction (81%), business administration (81%), and oceanography (80%). For course excellence (75% or more), curricula leaders at Naval Postgraduate School were computer science (100%), ordnance engineering (93%), physics (84%), and operations research (81%). Leaders at civilian schools were naval construction (95%), international relations (94%), and biology (92%).

f. Social/Family Life as a Graduate Student

There was no significant difference between those who considered social/family life changed for the worse from the combined percentage of those who considered it changed for the better or had no effect regardless of the school attended. The central tendency appears to be "Somewhat for the worse," however, the wide dispersion in responses weakens this conclusion.

Table 15. Social/Family Life

	NPS	Civilian
Significantly for the Better	11.4 53	13.9 49
Significantly for the Worse	20.3 95	19.3 68
Somewhat for the Better	15.8 74	18.8 66
Somewhat for the Worse	34.3 160	31.0 109
Little or No Effect	18.2 85	17.0 60

Changes in social/family life were dependent upon whether the academic difficulty was more or less than anticipated as shown in the following table. The percentages given in the table show, for example, 70.3% of those who attended Naval Postgraduate School and found the academic difficulty to be more than expected also considered social/family life to have changed for the worse.[34]

Table 16. Academic Difficulty by Social/Family Life at Naval Postgraduate School and Civilian School

	Social/Family Life					
	Worse		No Effect		Better	
	NPS	Civ.	NPS	Civ.	NPS	Civ.
More Than Expected	70.3 85	64.4 38	14.0 17	10.2 6	15.7 19	25.4 15
As Expected	54.6 140	50.5 118	20.8 55	18.4 43	24.6 65	31.2 73
Less Than Expected	30.1 25	34.5 19	16.9 14	14.5 8	53.0 44	50.9 28

9. Value of a P-Code to an Officer's Career

Obtaining a P-code commensurate with a graduate education was not considered to be detrimental to an officer's career. However, it cannot be shown with any statistical significance that officers consider a P-code to be beneficial to their career. Table 17 shows that 52% of those responding thought a P-code was beneficial while 48% thought a P-code had no effect or was detrimental to their career.

[34]Appendix C (9)

There is a significant difference between the opinions of those who have been assigned a P-coded billet and those who have not concerning the value of a P-code as shown in Table 18.[35]

Table 17. Value of a P-code to an Officer's Career

	N	Percentage
Beneficial	419	52.0
No Effect	334	41.4
Detrimental	53	6.6
TOTAL	806	100

Missing Observations: 25

Table 18. Value of P-code and P-code Assignment

	P-code Assignment	No P-code Assignment
Beneficial	55.8 305	43.7 111
No Effect	36.9 202	51.6 131
Detrimental	7.3 40	4.7 12
TOTAL	100 547	100 254

Missing Observations: 25

10. Necessity of Graduate Education in P-coded Billets

To effectively perform assigned duties in P-coded billets, a graduate education was considered necessary by 32% of those who had been assigned a P-coded billet. Those who considered a graduate education to be necessary or desirable and had also been assigned a

[35]Appendix C (10)

P-coded billet amounted to 86.6%. There was no significant difference among the various curricula.

11. Utilization of Graduate Education in Other Than P-coded Billets

The median and mode concerning the utilization of graduate education in other than P-coded billets was in the "occasionally" category as shown in Table 20.

Table 19. Necessity of Graduate Education by Those Assigned P-coded Billets

	N	Percentage
Graduate Education in That Specialty was a Necessity	154	27.1
Any Graduate Education Was a Necessity	28	4.9
Graduate Education in That Specialty Was Desirable	276	48.5
Any Graduate Education Was Desirable	35	6.2
Undergraduate Education in That Specialty Would Have Been Equally Effective	52	9.1
Any Undergraduate Education Would Have been Equally Effective	24	4.2
TOTAL	569	100

Missing Observations: 8

Although 22.5% indicated they have never used their graduate education in other than P-coded billets, only 8% (n = 65) of the total sample (N = 826) indicated they haven't used their graduate education in either P-coded billets or other billets. Extensive and frequent

utilization of graduate education in other than P-coded billets increases with rank as shown in Table 21.

Table 20. Utilization of Graduate Education in Other Than P-coded Billets

	N	Percentage
Extensively	160	19.7
Frequently	215	26.4
Occasionally	256	31.4
Never	183	22.5
TOTAL	814	100

Missing Observations: 12

Table 21. Utilization of Graduate Education By Rank

	Extensively and Frequently	Occasionally	Never	Total
LTJG	21.4 3	28.6 4	50.0 7	100.0 14
LT	36.2 21	31.0 18	32.8 19	100.0 58
LCDR	37.8 115	33.9 103	28.3 86	100.0 304
CDR	46.6 116	32.9 82	20.5 51	100.0 249
CAPT	61.1 104	27.1 46	11.8 20	100.0 170
RADM	82.3 14	17.6 3	0.0 0	99.9 17
VADM	100.0 2	0.0 0	0.0 0	100.0 2
TOTAL	46.1 375	31.4 256	22.5 183	100.0 814

Missing Observations: 12

12. Desirability of P-coded Billets

The percentage of officers who desire an assignment to a P-coded billet was considerably higher than those not desiring an assignment to a P-coded billet. Of the officers who had been assigned to a P-coded billet 85.7% desired to be reassigned to another P-coded billet. Of those who had not been assigned to a P-coded billet 70.3% desired to be assigned to a P-coded billet. As can be seen from Table 22 there are significant differences among the three communities of officers.[36] The percentage of those in the unrestricted line community that have been assigned and desire reassignment is significantly less than those in the other communities.

Table 22. Desirability of P-coded Billets

	URL	RL	STAFF
Have Been Assigned a P-coded Billet and Desire Reassignment to Another P-Coded Billet	42.1 150	69.7 122	61.8 165
Have Been Assigned and Do Not Desire Reassignment to Another P-coded Billet	12.1 43	4.5 8	8.6 23
Have Not Been Assigned a P-coded Billet But Desire to Be So Assigned	32.9 117	17.7 31	20.2 54
Have Not Been Assigned a P-coded Billet and Do Not Desire to Be So Assigned	12.9 46	7.8 14	9.4 25
TOTAL	100.0 356	100.0 175	100.0 267

Missing Observations: URL 6; RL 4; STAFF 7

[36] Appendix C (11)

13. Assignments to P-coded Billets

Of the officers who have received a Navy sponsored graduate education, 68.6% have been assigned to a P-coded billet. There was no significant difference between technical and non-technical curricula. Of the officers who have been assigned a P-coded billet 57.6% were assigned immediately upon completion of their graduate education and 89.1% were assigned within four years after obtaining a graduate education as shown in Table 23.

It was determined from the difference of the years of commissioned service when graduated and the present years of commissioned service completed that 42.8% (110) of the officers who have not been assigned to a P-coded billet graduated more than four years ago. This could mean that these officers have little chance to be assigned a P-coded billet in the future.

Table 23. When Assigned to P-coded Billets

Years After Graduation	N	Percentage
Immediately	328	40.1
1 - 2	79	9.7
3 - 4	100	12.2
5 - 6	26	3.2
7 - 8	15	1.8
9 - 10	8	1.0
11 - Later	5	0.6
Never	257	31.4
TOTAL	818	100

Missing Observations: 8

As can be seen from Table 24, the unrestricted line community is significantly lower than the other two communities in assigning officers to P-coded billets.[37]

Table 24. Assignments to P-coded Billets By Communities

	URL	RL	STAFF
Assigned	60.8	76.8	73.0
P-coded Billet	219	136	197

Missing Observations: URL 2; RL 2; STAFF 4

14. Recommendations Concerning the P-coding System

Since 50% of the officers responding to this questionnaire did not feel qualified to recommend changes to the P-coding system an attempt to draw conclusions from this question will not be made.

15. Technical Obsolescence

Of the officers responding, 84.4% considered that failure to be assigned to a P-coded billet for officers completing a technical curriculum would result in the subject matter learned becoming obsolete unless the officer maintains currency on an individual basis. Within this 84.4%, 64.3% believe an officer's knowledge will be obsolete within four years while 87.4% believe within six years.

An analysis of those officers completing a technical curriculum shows that 13% think they will never be obsolete. This is not significantly different from the 15.6% of the entire sample who selected the "Never" category.

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[37] Appendix C (12)

Table 25. Technological Obsolescence If Not Assigned a P-coded Billet

Years After Graduation	N	Percentage
1 - 2	151	19.0
3 - 4	279	35.2
5 - 6	155	19.5
7 - 8	50	6.3
9 - 10	28	3.5
11 - 12	4	0.5
13 +	2	0.3
Never	124	15.6
TOTAL	793	100

Missing Observations: 33

16. Methods of Maintaining Proficiency

A majority (79.2%) of officers say they have kept current in the area in which they obtained their graduate degree. The percentage of graduates of technical curricula who have not kept current (29%) was significantly larger than the graduates of non-technical curricula (13.3%).[38] Of the 29% in the technical curricula who have not kept current, 41.7% have not been assigned a P-coded billet while 61.1% of the 13.3% in the non-technical curricula have not been assigned.

17. Graduate Education and Promotion

Significantly more officers who have been eligible for promotion are of the opinion that their graduate education was a positive factor (56.7%) in their promotions than those of the opinion that their graduate

[38] Appendix C (13)

Table 26. Methods of Maintaining Currency

	N	Percentage
Journals and Organizations	54	6.6
On-the-Job	102	12.4
Off-the-Job Studies	31	3.8
On-the-Job and Journals and Organizations	286	34.7
Off-the-Job Studies and Journals and Organizations	60	7.3
On-the-Job and Off-the-Job Studies	85	10.3
Other than Above	35	4.2
Not Current	171	20.8
TOTAL	824	100.1*

Missing Observations: 2
*Percentage error due to rounding

education was insignificant or detrimental (43.3%).[39] Of those officers promoted early 69.6% were of the opinion that their graduate education was helpful while 59.7% of those promoted on time thought their graduate education was helpful.

As shown in Table 27, a significantly smaller percentage of officers in the unrestricted line community consider their graduate education was a positive factor in their promotions than those of the other communities.

[39]Appendix C (14)

Table 27. Effect on Promotions By Communities

	URL	RL	STAFF	TOTAL
Early; Helpful	8.6 26	4.3 7	10.4 21	8.0 54
Early; No Effect	4.0 12	1.2 2	4.5 9	3.5 23
Early; Hurt	0.0 0	0.6 1	0.0 0	0.2 1
On Time; Helpful	38.6 117	63.8 102	52.0 105	48.7 324
On Time; No Effect	38.9 118	21.3 34	26.2 53	30.8 205
On Time; Hurt	3.0 9	0.6 1	1.5 3	1.0 13
Failed; No Effect	4.3 13	6.3 10	4.5 9	4.8 32
Failed; Hurt	2.6 8	1.9 3	0.9 2	2.0 13
TOTAL	100.0 303	100.0 160	100.0 202	100.0 665

Not Eligible: URL 59; RL 19; STAFF 72
Missing Observations: 0
Missing Designators: 11

V. CONCLUSION

1. Naval officers are in concurrence with Navy policy concerning the period of time in which an officer should obtain a graduate degree as being the 5-8 year point. There are many reasons why all officers who attend graduate school cannot do so during this period of their career. The needs of the Navy, school quotas available, and individual officer preferences are but a few of the possible explanations as to why more do not attend during the 5-8 year point in their career.

2. Assuming that return on investment increases with increased time on active duty after graduate school, then graduate school appears to be a wise investment for the Navy since the vast majority of officers with graduate degrees intend to remain on active duty for at least a 20 year career. Since 64.2% of the officers attended graduate school with eight years or less commissioned service considered that graduate education was a positive influence on their career decisions, and if it can be assumed that most career decisions are made by the eight year point, then graduate education is a positive influence on career decisions.

3. There appear to be three primary reasons why Naval officers seek graduate education: to remain competitive with their contemporaries for assignments and promotions (ticket punching), to become

a more capable officer, and to fulfill educational aspirations. The most prevalent reason is to remain competitive with contemporaries. Younger officers seek graduate education "to fulfill education aspirations," whereas the older officers seek it "to become more capable officers".

4. The Postgraduate School Selection Board determines whether or not an officer will attend graduate school and in which curriculum. This selection procedure appears to be satisfactory as 86.7% of the selectees attend in the curriculum of their choice.

5. The great majority of officers believe that fitness reports received from graduate schools should not be regarded as equivalent to fitness reports received from operational/shore billets. The fitness report form and/or present methods used to evaluate officer performance is then not an appropriate form and/or method for evaluating officer student performance.

6. The civilian universities apparently enjoy a better reputation among their graduates than does Naval Postgraduate School. It is interesting to note, however, that there are no significant differences in the opinions of graduates of civilian schools and graduates of Naval Postgraduate School concerning course and instructor excellence, the degree of academic difficulty, and the effects of obtaining a graduate degree upon social/family life.

7. Most officers who have received a graduate education have been assigned to P-coded billets, thus it appears that the Navy is

adequately utilizing these officers. The restricted line and staff have utilized their officers in P-coded billets to a greater extent than the unrestricted line. This is expected as the unrestricted line career patterns are more varied and these officers generally spend more time at sea where there are few P-coded billets.

8. It cannot be concluded that P-codes are beneficial to officers' careers, but P-coded billets are desirable, especially among those who have been so assigned. Since 86.7% of those assigned to P-coded billets indicated that a graduate education was necessary or desirable to effectively perform their assigned duties, P-coded billets to which officers have been assigned apparently are properly identified.

9. Graduate education has been utilized in either P-coded or other billets by 92% of the officers, which supports the earlier conclusion that graduate education is a wise investment for the Navy. This high degree of utilization alone constitutes a good investment, notwithstanding the increased retention as a result of the availability of graduate education. Utilization of graduate education apparently increases with rank which may indicate that the 92% utilization may increase as the junior officers accumulate more time on active duty.

10. There is little evidence in this study to support the contention that unrestricted line officers are wary of being channeled into a subspecialty since 75% desire to be assigned to a P-coded billet and only 5.6% thought their graduate education hurt their promotion opportunities.

11. The majority of officers believe that technological obsolescence occurs within six years after graduation. If credence is given to this finding, the Navy is assigning officers to P-coded billets before they are technologically obsolete since 95% of those officers assigned to P-coded billets are assigned within six years after graduation. This conclusion is supported by the fact that 72.4% of those who indicated they are current in the area of their graduate education also indicated the method used to maintain currency was a combination of on-the-job training and other methods.

B. LIMITATIONS OF THE STUDY

The major limitations of this study was known at its inception. Since the purpose was to gather and analyze data for the Graduate Education Committee, the study could not be limited to specific designator communities or curricula, but all officers with a graduate degree had to be sampled. This precluded specificity in question content toward any designator community or curriculum.

The forced response type of questionnaire utilized limits the respondent in that he may not hold any of the opinions available for selection. The responses, however, were drawn from many sources including the pilot sample of 75 respondents.

C. RECOMMENDED FUTURE RESEARCH

The following are areas in which further research should be conducted:

1. Individual studies of specific curricula.

2. What information should be included in a fitness report for an officer student and how performance as a student correlates with performance as a Naval officer.

3. The correlation of graduate education to promotion.

4. The opinion of officers with a graduate degree compared with the opinions of officers without a graduate degree.

APPENDIX A

QUESTIONNAIRE

		N	Percentage
1.	My present rank is:		
	1. Ensign	0	0.0
	2. Lieutenant (junior grade)	14	1.7
	3. Lieutenant	60	7.3
	4. Lieutenant Commander	310	37.5
	5. Commander	252	30.5
	6. Captain	171	20.7
	7. Rear Admiral	17	2.1
	8. Vice Admiral	2	0.2
2.	Years of commissioned service completed:		
	1. 1-4	24	2.9
	2. 5-6	22	2.7
	3. 7-8	48	5.8
	4. 9-10	75	9.1
	5. 11-12	95	12.0
	6. 13-14	114	13.8
	7. 15-16	102	12.3
	8. 17-18	76	9.2
	9. 19 or more	201	32.2

		N	Percentage
3.	Years of commissioned service upon completion of my last graduate degree:		
	1. 1-4	111	13.4
	2. 5-6	123	14.9
	3. 7-8	196	23.7
	4. 9-10	141	17.1
	5. 11-12	92	11.1
	6. 13-14	68	8.2
	7. 15-16	40	4.9
	8. 17-18	26	3.1
	9. 19 or more	29	3.5
4.	A career naval officer should study for a graduate degree during which years of commissioned service?		
	1. 1-4	53	6.4
	2. 5-6	338	40.9
	3. 7-8	248	30.0
	4. 9-10	128	15.5
	5. 11-12	42	5.1
	6. 13-14	12	1.5
	7. 15-16	1	0.1
	8. 17-18	0	0.0
	9. 19 or more	4	0.5

	N	Percentage
5. I intend to remain in the Navy for:		
1. The completion of my obligated service but less than 20 years.	27	3.3
2. 20 years	197	23.8
3. 20-26 years	315	38.1
4. 26 years or more	277	33.5
Missing observations	10	1.2
6. The availability of graduate education:		
1. Positively influenced my decision to remain in the Navy.	452	54.7
2. Negatively influenced my decision to remain in the Navy.	7	0.8
3. Had no effect on my decision to remain in the Navy.	363	43.9
Missing observations	4	0.5
7. In my opinion the primary reason most naval officers seek graduate education is:		
1. To remain competitive with their contemporaries for further assignments and promotions (ticket punching).	321	38.9
2. To become a more capable naval officer.	219	26.5
3. To enable a change in designator.	5	0.6
4. To procure a P-code.	7	0.8
5. To increase employment opportunities upon retirement.	66	8.0

	N	Percentage
6. To fulfill personal educational aspirations.	199	24.1
Missing observations	9	1.1
8. I received my graduate degree from:		
1. NPS and consider it to be superior to civilian universities.	79	9.6
2. NPS but would have preferred to attend a civilian university.	15	12.7
3. NPS and consider it equivalent to civilian universities.	285	34.5
4. A civilian university and consider it superior to NPS.	255	30.9
5. A civilian university but would have preferred to attend NPS.	11	1.3
6. A civilian university and consider it equivalent to NPS.	86	10.4
Missing observations	5	0.6
9. My graduate degree curriculum was a choice that was made by me.		
1. Yes.	715	86.6
2. No.	109	13.2
Missing observations	5	0.6

10-15. Curricula.

Column one: curriculum studied.

Column two: preferred curriculum.

Column three: the curriculum more officers should study.

1.	Aeroelectronics	4	4	4
2.	Anti-submarine Warfare	0	3	18
*3.	Behavioral Science	1	5	23
4.	Biological Sciences	16	18	7
5.	Chemistry	10	9	3
6.	Computer Science	10	21	12
*7.	Criminal Law	1	3	3
*8.	Ecology	1	2	0
*9.	Economics	3	5	9
*10.	Education	1	3	4
11.	Engineering, Acoustics	4	6	9
12.	Engineering, Aeronautical	42	36	5
13.	Engineering, Chemical	4	6	2
14.	Engineering, Communications	3	5	3
15.	Engineering, Electrical	22	15	3
16.	Engineering, Electronics	38	34	17
17.	Engineering, Hydrographic	3	2	0
18.	Engineering, Mgt. and Indust.	34	31	33
19.	Engineering, Mechanical	45	24	8
20.	Engineering, Naval Const.	21	22	13
21.	Engineering, Nuclear Power	3	7	10
22.	Engineering, Ordnance	21	22	13
*23.	English	0	1	2

*24.	Intelligence	0	1	2
*25.	International Law	4	6	3
*26.	International Relations	18	22	21
*27.	Languages	0	0	8
*28.	Management, Business Admin.	106	146	150
*29.	Management, Communications	13	3	3
*30.	Management, Computer Systems	46	37	28
*31.	Management, Financial	61	48	57
*32.	Management, Personnel	44	39	103
*33.	Management, Petroleum	10	8	2
*34.	Management, Procurement	12	17	35
*35.	Management, Systems Inv.	8	6	6
*36.	Management, Transportation	13	13	2
*37.	Marketing	4	5	2
*38.	Material Science	1	0	0
39.	Mathematics	8	12	3
40.	Meteorology	22	13	0
41.	Naval History	0	0	2
42.	Naval Science	1	1	7
43.	Oceanography	37	34	20
*44.	Ocean Law	0	0	4
45.	Operations Research	45	48	43
46.	Physics	42	31	4

*47.	Political Science	7	10	5
*48.	Public Relations	4	4	5
*49.	Psychology	3	3	4
*50.	Religion	5	5	1
*51.	Retailing	2	2	0
*52.	Social Science	3	3	5
*53.	Subsistence Technology	1	1	0
*54.	Taxation	0	1	0
	Missing observations: column one	19		
	Missing observations: column two		21	
	Missing observations: column three			107

*Non-technical curricula

16. The curriculum of my graduate education was:

1. Broadly structured allowing for numerous electives.	167	20.2
2. Narrowly structured allowing for few electives.	353	42.7
3. Well balanced.	304	36.8
Missing observations	2	0.2

17. The school administration where I attended was:

1. Very efficient and helpful.	290	35.1
2. Efficient and helpful.	510	61.7
3. Inefficient and uncooperative.	26	3.1

	N	Percentage
18. The academic difficulty of my graduate education was:		
1. About what I had anticipated.	503	60.9
2. Less difficult than I had anticipated.	142	17.2
3. More difficult than I had anticipated.	181	21.9
19. Of the instructors I had, I would consider the following percentage to have been excellent:		
1. More than 90%.	123	14.9
2. About 75%.	331	40.1
3. About 50%.	241	29.2
4. About 25%	115	13.9
5. Less than 10%.	16	1.9
20. Of the courses taken during my graduate education, I would consider the following percentage to have been excellent:		
1. More than 90%.	204	24.7
2. About 75%.	410	49.6
3. About 25%.	34	4.1
4. Less than 10%	6	0.7
21. Selection boards (for promotion) should consider fitness reports for full time graduate students as:		

	N	Percentage
1. Equivalent to fitness reports received by officers assigned to normal operational/shore billets.	142	17.2
2. A special assignment, and place little emphasis on the professional ratings assigned.	292	35.4
3. A special assignment with emphasis only on the student's grade point average.	153	18.5
4. "Not Observed" and submitted for record purposes only	238	28.8
Missing observations	1	0.1
22. Compared to a normal tour of duty, social/family life generally changes when studying for a graduate degree.		
1. Significantly for the better.	102	12.3
2. Significantly for the worse.	164	19.9
3. Somewhat for the better.	141	17.1
4. Somewhat for the worse.	271	32.8
5. Has little or no effect as compared to a normal tour of duty.	146	17.7
Missing observations	2	0.2
23. As a result of my graduate education, I received a change in designator.		
1. Yes.	117	14.2
2. No.	708	85.7
Missing observations	1	0.1

	N	Percentage
24. In my opinion:		
1. More P-coded billets should be available for the unrestricted line officers.	102	12.3
2. The P-coded billets system should be utilized only by the restricted line officers.	22	2.7
3. The P-coding system is functioning properly and should be continued.	59	7.1
4. The P-coding system should be continued with some modifications.	223	27.0
5. I do not feel qualified to recommend changes to the P-coding system.	413	50.0
Missing observations.	7	0.8
25. Obtaining a P-code commensurate with graduate education is generally:		
1. Beneficial to an officer's career.	419	50.7
2. Has no effect on an officer's career.	334	40.4
3. Detrimental to an officer's career.	53	6.4
Missing observations	20	2.4
26. To effectively perform assigned duties in the P-coded billets I have held:		
1. A graduate education in that specialty was a necessity.	154	18.6
2. Any graduate education was a necessity.	28	3.4

	N	Percentage
3. A graduate education in that specialty was desirable.	276	33.4
4. Any graduate education was desirable.	35	4.2
5. An undergraduate education in that specialty would have been equally effective.	52	6.3
6. Any undergraduate education would have been equally effective.	24	2.9
7. I haven't been assigned a P-coded billet.	256	31.0
Missing observations	1	0.1
27. My graduate education has been utilized in other than P-coded billets:		
1. Extensively.	160	19.4
2. Frequently.	215	26.0
3. Occasionally.	256	31.0
4. Never.	183	22.2
Missing observations	12	1.5
28. Concerning the utilization of my graduate education:		
1. I have been assigned one or more P-coded billets in the area of my graduate education, and I desire to be reassigned to the same type of billet.	442	53.5
2. I have been assigned to one or more P-coded billets in the area of my graduate education, and I do not desire to be reassigned to another.	74	9.0

	N	Percentage
3. I have never been assigned to a P-coded billet in the area of my graduate education, but I desire to be so assigned.	206	24.9
4. I have never been assigned, and I do not desire to be assigned to a P-coded billet.	87	10.5
Missing observations	17	2.1
29. I was assigned à P-coded billet within _____ years after completing my graduate education.		
1. Immediately	328	39.7
2. 1-2	79	9.6
3. 3-4	100	12.1
4. 5-6	26	3.1
5. 7-8	15	1.8
6. 9-10	8	1.0
7. 11-later	5	0.6
8. I haven't been assigned a P-coded billet.	257	31.1
Missing observations	8	1.0
30. If not assigned to a P-coded billet within _____ years upon completion of a technical curriculum (e.g., Electrical Engineering, Aeronautical Engineering, etc.), the subject matter learned will probably be obsolete due to rapidly changing technology unless the officer maintains currency on an individual basis.		

	N	Percentage
1. 1-2	151	18.3
2. 3-4	275	33.8
3. 5-6	155	18.8
4. 7-8	50	6.1
5. 9-10	28	3.4
6. 11-12	4	0.5
7. 13-longer	2	0.2
8. Never obsolete	124	15.0
Missing observations	33	4.0
31. I have kept current in the area for which I was educated by:		
1. Professional journals and organizations.	54	6.5
2. On-the-job utilization.	102	12.3
3. Off-the-job utilization.	31	3.8
4. 1 and 2 above.	286	34.6
5. 1 and 3 above	60	7.3
6. 2 and 3 above	85	10.3
7. I have kept current but not by any of the aforementioned methods.	35	4.2
8. I have not kept current.	171	20.7
Missing observations	2	0.2

	N	Percentage
32. My promotions have been ____ and I think my graduate education was a _____ factor in these promotion decisions.		
1. Early; positive (helped me).	55	6.7
2. Early; detrimental (hurt me).	1	0.1
3. Early; insignificant.	23	2.8
4. With my contemporaries; positive (helped me).	327	39.6
5. With my contemporaries; detrimental (hurt me).	13	1.6
6. With my contemporaries; insignificant.	208	25.2
7. Failed selection; detrimental (hurt me).	14	1.7
8. Failed selection; insignificant.	33	4.0
9. I have not been eligible for selection since completion of my graduate education.	152	18.4

APPENDIX B

Graduates and Sample Size of Naval Postgraduate School and Civilian Schools by Designator

	NPS		CIVILIAN		TOTAL	
	Graduates	Sample	Graduates	Sample	Graduates	Sample
11xx	1090	147	360	57	1450	204
13xx	668	107	305	50	973	157
14xx	314	59	125	20	439	79
15xx	177	27	109	17	286	44
16xx	51	9	42	5	93	14
17xx	68	15	24	5	92	20
18xx	115	19	20	2	135	21
21xx	0	0	3	0	3	0
23xx	20	2	83	21	103	23
29xx	5	1	38	7	43	8
31xx	291	54	579	99	870	153
41xx	2	0	127	9	129	9
51xx	116	22	297	56	413	78
9999	--	7	--	4	--	11
Totals	2917	469	2148	352	5065	821

Missing Observations: 5
Missing Designators: 11(9999)

APPENDIX C

EXPLANATION OF STATISTICAL INFERENCES

C (1). The sample included 362(n) respondents of the population (N=826) of unrestricted line officers. The standard error for this sample is computed using the formula for sampling without replacement: (assume Ps=0.5)

$$1.96\ Sp = \left((Ps(1-Ps)(N-n)/n(N-1) \right)^{\frac{1}{2}}$$

The standard error is 0.047 or $\pm$ 4.7%. For the total sample (n=826) of the population (N=5065), the error is reduced to $\pm$ 3.1%.

C (2). The tolerances on the percentages of those who studied each period are the same as those for the total population ($\pm$ 3.1%).

C (3). There were 231 officers sampled who had graduated with six years or less commissioned service, and 153 (66%) of these indicated that graduate education had a positive influence on their career decisions. If it is assumed that there is no difference between the percentages who considered it a positive influence and those who considered it to have no effect, then p=0.5 and:

$$S = (pq/n)^{\frac{1}{2}} = .033$$

and $p - 1.96S = .435$ and $p + 1.96S = .565$.

Since 66% does not fall in this interval, more considered graduate education to have a positive effect.

C (4). The standard error of $\pm$ 3.1% applies to this question which shows that 36.3% to 42.5% of the officers seek a graduate degree for "ticket punching".

C (5). To show that the years of commissioned service when graduated is independent of curriculum choice, assume that the percentage (expected value) who chose their curriculum in each category of years service is equal to the total percentage. Computing chi-square for this relationship yields $X^2 = 1.45$ with eight degrees of freedom. Chi-square for .05 is 15.5, thus curriculum choice is not dependent upon years commissioned service when graduated.

C (6). Same as in (3) above. Assume p =0.5,

$$S=\left(\frac{pq}{n}\right)^{\frac{1}{2}} = 0.027$$

The largest interval (civilian) is 44.8% to 55.2% and neither of the percentages for "superior" fall within the interval.

C (7). The percentage who attended Naval Postgraduate School who thought their curriculum was well balanced or broadly structured was 48.5%. The corresponding percentage from civilian schools was 69.7%. Let $P_{1s} = .485$ and $P_{2s} = .697$. If it is to be assumed that $P_1 = P_2$, a common value of P would be (.485 + .697) / 2 = .59. Substituting this into the formula:

$$S_{p1s - p2s} = \left((.59)(.41)\ (1/468 + 1/351) \right)^{\frac{1}{2}} = .035$$

Since, for 95% confidence, the interval in this case is approximately $\pm$ .07 and the difference between P_{1s} and P_{2s} is .212, then the percentages are not the same.

C (8). The same analysis used in (7) above yields significant differences between Naval Postgraduate School and civilian university graduates concerning a "very efficient and helpful" school administration.

C (9). Since the percentages of those who attended Naval Postgraduate School and civilian universities are not significantly different concerning academic difficulty and social/family life, they will be combined in this chi-square test to show that social/family life changed according to the academic difficulty encountered.

	Social/Family Life			
Academic Difficulty	Worse	No Effect	Better	Total
More Than Expected	123	23	34	180
As Expected	258	98	138	494
Less Than Expected	44	22	72	138
	425	143	244	812

To determine expected proportions in each category, consider repeated sampling of this type, then 180 of the 812 would respond with "more than expected." Using this proportion in all categories of "more than expected" and 494/812 for "as expected" and 138/812 for "less than expected", the expected proportions and chi-square can be computed to yield $X^2 = 53.0$ with four degrees of freedom. Since X^2 at .05 is 9.49, then social/family life is affected by academic difficulty.

C (10). Utilizing a similar analysis to (9) above and computing chi-square to show that the value of a P-code is partially determined by whether or not officers have been previously assigned to P-coded billets, the value of chi-square equals 16.47 with two degrees of freedom. The chi-square table for .05 yields a value of 5.99.

C (11). A similar analysis to that used in (7) above shows that 61.8% is significantly larger than 42.1%.

C (12). Again using the analysis of (7) shows that 73% is larger than 60.8%.

C (13). Same as above, 29% is larger than 13.3%.

C (14). Same as above.

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13. ABSTRACT

A survey of naval officers who have received a Navy sponsored graduate degree was conducted by a questionnaire to determine their opinions concerning numerous topics related to obtaining a graduate degree and the utilization of their graduate education. Results showed that obtaining a graduate degree was perceived as having a positive influence on officer retention. Most officers think a graduate degree should be obtained during the five to eight year point in their career. Approximately 70% of the officers who have received a graduate degree have been assigned to a P-coded billet. The majority indicated that fitness reports submitted by graduate schools for officer students should not be considered as equivalent to those received from operational/shore billets by Selection Boards for promotion. The most frequently occurring reason for seeking a graduate education was to remain competitive with contemporaries.

The report summarizes responses to each question and recommends the direction of future research.

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